

REMARKS

Upon entry of the amendments in this paper, claims 8-20 will be pending in the above-identified application. Claims 8 and 14 are herein amended. No new matter is entered. It is respectfully submitted that this paper is fully responsive to the Office action mailed on April 28, 2009.

Claim Rejections - 35 U.S.C. §102(b)

Claims 8-10 and 14-17 were rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,050,570 to *Thring*.

Anticipation requires the presence of each and every claim limitation in a single prior art reference. However, as explained below, Applicants submit that the *Thring* reference fails to disclose the claimed “high temperature section” and “member.”

Applicants submit that the *Thring* reference describes an open-cycle internal combustion Stirling engine (internal combustion integrated type Stirling engine), whose structure differs from the original Stirling engine as an external combustion engine, and its working gas is supplied from and discharged to the outside by the air, and its operating principle is also different from the Stirling engine of the present invention.

First, *Thring* employs an internal combustion engine, in which a high temperature portion at the top of a cylinder is a combustion chamber 32. Hence, only this portion has heat resistance to be able to withstand the heat of the combustion in the cylinder, and heat exchange with the outside is not necessary for such an engine. If the high temperature portion employed by *Thring*

is made from a high thermal conductive material, the heat of the internal gas that is heated to a high temperature would escape to the outside from the combustion chamber 32 through the cylinder 12, whereby the thermal insulation performance would be significantly reduced, and the performance as an engine decrease. Therefore, it is clear that a metal or ceramic material with heat resistance but with low thermal conductivity is selected for the high temperature portion employ by *Thring*, and that *Thring* does not have in mind the technical concept of forming the high temperature portion in use of a material having high heat resistance as well as high thermal conductivity.

Whereas, for example, in the present invention (claims 8 to 20) a high temperature portion functions as a heat exchanger that transfers the heat energy from outside, and this high temperature portion is formed from a heat resistant/high thermal conductivity material.

Therefore, Applicants submit that *Thring* neither discloses nor suggests the following: “the high temperature section is formed into an integral structure by means of a heat resistant/high heat conductive material having high heat resistance property and high heat conductivity” in claim 8 of this application and “the high temperature section is formed by integrally molding an expansion space head portion and a high temperature side heat exchanger main body with the same heat resistant/high heat conductive material having high heat resistance property and high heat conductivity” in claim 14 of this application.

Second, the Examiner interprets an insulating gasket 110 employed by *Thring* as “a member connecting the high temperature section and a low temperature section” of the present invention. However, the gasket 110 by *Thring* is for preventing leakage from the cylinder 12,

and preventing cracking in the cylinder due to the temperature gradient between a cold portion and a hot portion (column 6, lines 26 to 30). Therefore, the insulating gasket 110 is merely a sealing member between the hot portion and the cold portion, and corresponds to the seal member described in paragraph [0014] of the present application. *Thring* neither describes nor suggests anything corresponding to “the member formed of a heat resistant/low heat conductive material having low heat conductivity,” which is shown in the present invention.

Third, claim 8 describes “the member formed of a heat resistant/low heat conductive material having low heat conductivity and contacting a flow of working gas.” This member makes it possible to set the temperature of the high temperature portion high, and allows the heat losses due to thermal conduction at the connecting member to be greatly reduced, in comparison with conventional devices, whereby a high efficient Stirling engine can be obtained.

Thus, for at least these reasons, Applicants submit that the *Thring* reference does not anticipate independent claim 8 of the present application. Also, claims 9 and 10 depend from claim 8. Thus, for the same reasons as claim 8, these claims are not anticipated by *Thring*.

Claim 14 is characterized in having the following feature: “the high temperature section is formed by integrally molding an expansion space head portion and a high-temperature side heat exchanger main body with the same heat resistant/high heat conductive material having high heat resistance property and high heat conductivity.”

In contrast, the invention by *Thring* the high temperature portion is the combustion chamber, as explained above, and the invention does not include a heat exchanger. Therefore *Thring* neither discloses nor suggests the constitution of the present invention.

Since the invention according to claim 14 has, in particular, the above constitution, the heat exchanger on a high temperature side, when compared with the conventional high temperature portion formed by projecting only a thermally conducting pipe, comprises a pressure resistant structure. Hence, this structure makes it possible, for example, to further increase the heating temperature of the high temperature portion, as well as improve its durability. *Thring* does not disclose this feature and therefore does not anticipate claim 14.

Also, claims 15-17 are dependent on claim 14. Thus, for the same reasons as claim 14, these claims are not anticipated by *Thring*.

Furthermore, Applicants submit that *Thring* does not disclose that the high temperature section is formed from the materials described in claim 9 and 15 or that the low temperature section is formed from the materials described in claim 10 and 17. Accordingly, for these additional reasons, Applicants request reconsideration of claims 9, 10, 15, and 17.

Claim Rejections - 35 U.S.C. §102(b)

Claims 11-13 and 18-20 are rejected under 35 U.S.C. §103(a) as being obvious in view of *Thring*.

Applicants request reconsideration of these claims, which depend from claims 8 and 14, in view of the above remarks

Conclusion

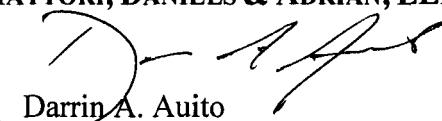
In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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